March 19, 2009

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Sacramento, CA 95825

Mr. Michael Hendrick
California Department of Water Resources
P.O. Box 942836
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Subject: Comments on Environmental Reviews for the *2009 Drought Water Bank.*

Dear Ms. Victorine and Mr. Hendrick:

Butte Environmental Council, the California Sportfishing Protection Alliance, the Center for Biological Diversity, and the California Water Impact Network ("the Coalition") submit the following comments and questions for the Draft Environmental Assessment ("EA") and Findings of No Significant Impact ("FONSI"), for the *2009 Drought Water Bank* ("DWB" or "Project"). We also provide comments about the purpose and need for the 2009 Drought Water Bank, the Governor's recent drought emergency declaration, and the CEQA Notice of Exemption to cover this project's implementation with mitigation measures from the 2003 and 2007 Environmental Water Account environmental documents.

The Bureau of Reclamation's draft environmental review of the California Department of Water Resources ("DWR's") DWB does not comply with the requirements of National Environmental Policy Act ("NEPA"), 42 U.S.C. §4321 *et seq.* First, we believe that the Bureau needs to prepare an environmental impact statement ("EIS") on this proposal that could allow up to 600,000 acre-feet (AF) of surface water transfers, up to 340,000 AF of groundwater substitution, and significant crop idling. Bureau reliance on the EA itself violates NEPA requirements because, among other things, the EA fails to provide a reasoned analysis and explanation to support the Bureau's proposed finding of no significant impact. The EA contains a fundamentally flawed alternatives analysis, and treatment of the chain of cause and effect extending from project implementation leading to inadequate analyses of nearly every resource and cumulative impacts. 6-1 6-2

An EIS would afford the Bureau, DWR, the State Water Resources Control Board, and the California public far clearer insight into how, where, and why the DWB might or might not be needed. The draft EA/FONSI as released this month fails to provide adequate disclosure of these impacts. 6-3

Second, exemption of the 2009 DWB from the requirements of the California Environmental Quality Act (CEQA) does not reflect the actual environmental effects of the proposal—which are similar to the proposed 1994 Drought Water Banks and for which a final Program Environmental Impact Report was completed in November 1993. In 2000, the Governor's Advisory Drought Planning Panel report, *Critical Water Shortage Contingency Plan* promised a program EIR on a drought-response water transfer program, but was never undertaken. Twice in recent history, the state readily acknowledged that CEQA review for a major drought water banking program was appropriate. So, DWR's Notice of Exemption reflects an end-run around established water law through the use of water transfers, and is therefore vulnerable to legal challenge under the California Environmental Quality Act. 6-4

Finally, we also question the merits of and need for the DWB project itself. The existence of drought conditions at this point in time is highly questionable and reflects the state's abandonment of a sensible water policy framework given our state and national economic recession and tattered public budgets. Our organizations believe the Governor's drought emergency declaration goes too far to help a few junior water right holders, and that at bottom, the 2009 Drought Water Bank is not needed. The DWB will directly benefit the areas of California whose water supplies are the least reliable by operation of state water law. Though their unreliable supplies have long been public knowledge, local, state, and federal agencies in these areas have failed to stop blatantly wasteful uses and diversions of water and to pursue aggressive planning for regional water self-sufficiency. 6-5

The proposed DWB will have significant effects on the environment—both standing alone and when reviewed in conjunction with the multitude of other plans that incorporate and are dependent on Sacramento Valley water. Ironically, the Bureau appears to recognize in its cumulative impacts discussion that there is potential for significant adverse impacts associated with the DWB, but instead of conducting an EIS as required, attempts to assure the public that the 2009 DWB will be deferred to the "willing sellers" through individual "monitoring and mitigation programs" as well as through constraining actions taken by both DWR and Bureau professional staff whose criteria ought instead be incorporated into the Proposed Action Alternative. EA at p. 37, FONSI at p. 3, 4, 5, 6, 7. Of course, this is not a permissible approach under NEPA; significant adverse impacts should be mitigated—or avoided altogether as CEQA normally requires.[1] Moreover, in light of the wholly inadequate monitoring planned for the 2009 6-6

[1] Perhaps even more telling, the Bureau actually began its own Programmatic EIS to facilitate water transfers from the Sacramento Valley and the interconnected actions that are integrally related to it, but never completed that EIS and now has impermissibly broken out this current segment of the overall Program for piecemeal review in the present draft EA. See 68 Federal Register 46218 (Aug 5, 2003) (promising a Programmatic EIS on these related activities, "include[ing] groundwater substitution in lieu of surface water supplies, conjunctive use of groundwater 6-7

DWB's extensive water transfer program, the suggestion that the public should be required to depend on that insufficient monitoring to provide the necessary advance notice of "significant adverse impacts" is an unacceptable position. 6-8

We incorporate by reference the following documents: 6-9

- Butte Environmental Council's comments on the Supplemental Environmental Water Account EIR/EIR, 2006.
- Butte Environmental Council's letter to DWR regarding the Drought Water Bank Addendum from Lippe Gaffney Wagner LLP, 2009.
- Butte Environmental Council's letter to DWR regarding the Drought Water Bank Addendum.
- Multi-Signatories letter regarding the Drought Water Bank, 2008.
- Professor Kyran Mish's White Paper, 2008.
- Professor Kyran Mish's comments on the 2009 DWB EA/FONSI
- Professor Karin Hoover's Declaration, 2008.

I. The Bureau and DWR Must Prepare an Environmental Impact Statement/ Environmental Impact Report on the Proposed 2009 Drought Water Bank

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We strongly urge the Bureau and DWR to withdraw these inadequate environmental documents and instead prepare a joint EIR/S on the 2009 DWB, before approval by the State Water Resources Control Board (SWRCB), in order to comply with both NEPA and CEQA requirements for full disclosure of human and natural environmental effects.

NEPA requires federal agencies to prepare a detailed environmental impact statement on all "major Federal actions significantly affecting the quality of the human environment . . . ." 42 U.S.C. §4332(2)(C). This requirement is to ensure that detailed information concerning potential environmental impacts is made available to agency decision makers and the public before the agency makes a decision. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). CEQA has similar requirements and criteria.

Under NEPA's procedures, an agency may prepare an EA in order to decide whether the environmental impacts of a proposed agency action are significant enough to warrant preparation of an EIS. 40 C.F.R. §1508.9. An EA must "provide sufficient evidence and analysis for determining whether to prepare an [EIS]" (*id.*), and must demonstrate that it has taken a "'hard look' at the potential environmental impact of a project." *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) (internal quotation marks omitted). However, the U.S. Court of Appeals for the Ninth Circuit has cautioned that "[i]f an agency decides not to

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and surface water, refurbish existing groundwater extraction wells, install groundwater monitoring stations, install new groundwater extraction wells…" *Id.* At 46219. See also http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=788 (current Bureau website on "Short-term Sacramento Valley Water Management Program EIS/EIR").

prepare an EIS, it must supply a convincing statement of reasons to explain why a project's impacts are insignificant." *Id.* (internal quotation marks omitted). The Bureau has not provided a convincing statement of reasons explaining why the DWB's impacts are not significant. So long as there are "substantial questions whether a project *may* have a significant effect on the environment," an EIS must be prepared. *Id.* (emphasis added and internal quotation marks omitted). Thus, "the threshold for requiring an EIS is quite low." *NRDC v. Duvall*, 777 F. Supp. 1533, 1538 (E.D. Cal. 1991). Put another way, as will be shown through our comments, the bar for sustaining an EA/FONSI under NEPA procedures is set quite high, and the Bureau fails to surmount it with its report on the 2009 DWB.

NEPA regulations promulgated by the Council on Environmental Quality identify factors that the Bureau must consider in assessing whether a project may have significant environmental effects, including:

(1) "The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks." 40 C.F.R. §1508.27(b)(5).
(2) "The degree to which the effects on the quality of the human environment are likely to be highly controversial." *Id.* §1508.27(b)(4).
(3) "Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate on a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts." *Id.* §1508.27(b)(7).
(4) "The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration." *Id.* §1508.27(b)(6).
(5) "The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973." *Id.* §1508.27(b)(9).

Here, the Bureau has failed to take a hard look at the environmental impacts of the DWB. As detailed below, there are substantial questions about whether the 2009 DWB's proposed water transfers will have significant effects on the region's environmental and hydrological conditions especially the interactions between groundwater and surface streams of interest in the Sacramento Valley region. There are also substantial questions about whether the 2009 DWB will have significant adverse environmental impacts when considered in conjunction with the other related water projects underway and proposed in the region. The Bureau simply cannot rely on the EA/FONSI for the foreseeable environmental impacts of the proposed 2009 DWB and still comply with NEPA's requirements.

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A. The Proposed Action Alternative is poorly specified making it difficult to identify chains of cause and effect necessary to analyze adequately the alternative's environmental effects.

The Proposed Action Alternative is poorly specified and needs additional clarity before decision makers and the public can understand the human and environmental consequences of the 2009 Drought Water Bank. The EA describes the Proposed Action Alternative as one reflecting the Bureau's intention to approve transfers of Central Valley Project water from willing sellers who contract with the Bureau ordinarily to use surface water on their croplands. Up to 208,000 AF of CVP water are on offer from these sellers, according to Table 1 of the EA. "Priority criteria" are described in the EA indicating that sales will be prioritized for water-short public health, urban, and then agricultural uses, in that order. Table 2 of the EA indicates that as much as 839,117 AF has been requested.

The EA/FONSI's statement of purpose and need states specifically that "the purpose of the proposed action is to help facilitate the transfer of water throughout the State from willing sellers of CVP water upstream of the Delta to buyers that are at risk of experiencing water shortage in 2009." This paragraph omits coherent discussion of need. The purpose and need should also state that this transfer program would be subject to specific criteria for prioritizing transfers, as described on page 6: "It is anticipated that water made available to [potential buyers] from the DWB would be prioritized as flows: existing health and safety domestic needs, municipal supply subject to water shortage contingency plan measures, and agricultural irrigation for existing crops and livestock subject to water shortage contingency plan measures." 6-12

The EA's description of the proposed action alternative needs to make clear what would occur if the sale criteria are in fact applied. Are both project agencies applying them, or just one and not the other? What is the legal or policy basis authorizing use of these criteria? Will exceptions be provided, and if so, by what criteria would exceptions be made? 6-13

Taken together with DWR's March 4th Addendum to the EWA EIS/R, there is considerable ambiguity over just how many potential sellers there are and how much water they would make available to the DWB. This is reflected in different numbers in the two environmental documents justifying the DWB. The following table shows the discrepancies across these uncoordinated environmental reviews: 6-14

Comparison of Environmental Review Parameters for the 2009 Drought Water Bank	**DWR Addendum, March 4th**	**Bureau EA, March 4th**
Narrative project description present in document?	No	Yes
DWB sale criteria discussed?	No	Yes
Total potential water for sale (AF)	533,435	389,328
Total potential water requests (AF)	818,905	839,117
Total potential water sales covered by environmental compliance with the EWA EIS/R (AF)	600,000	Not described.

Absence of agreement among these documents on basic facts of the 2009 DWB signals that neither the Bureau nor DWR have a clear idea what the DWB is. This problem contributes

greatly to and helps explain the poorly rendered treatment of causes and effects that permeate the Bureau's EA. The project agencies, decision-makers, and the public all face a moving target with the 2009 Drought Water Bank. Such discrepancies reflect hasty consideration and poor planning by project proponents. Nor can the agencies reasonably attribute their inadequate environmental reviews on lack of warning. The Governor has made fear of drought a centerpiece of his recent water statements since at least last June. Yet DWR and the Bureau apparently have not agreed on these basic facts making up the DWB.

From data available in the EA and the Addendum, it is not possible to determine with confidence just how much water is requested by potential urban and agricultural buyers. There is no attempt to describe how firmly tendered are offers of water to sell or requests to purchase. With between 400,000 and 500,000 AF of presumably urban buyer requests[2] (which have priority over agricultural purchases, according to the DWB priorities) and a cumulative total of less than 400 TAF from willing sellers (with just over half that coming from CVP water), it would appear that many agricultural buyers are not likely to have their needs addressed by the 2009 DWB? If so, the Bureau and DWR should state the likelihood that all urban requests and perhaps no agricultural requests will be fulfilled in order to achieve a full and correct environmental compliance treatment of the proposed action. Such an estimate is necessary for accurate explication of the chains of cause and effect associated with the 2009 DWB—and which must propagate throughout a NEPA document for it to be adequate as an analysis of potential natural and human environmental effects of the proposed project. We have additional specific questions:

- Within the request of the San Luis and Delta Mendota Water Authority (SLDMWA), its requesters include SCVWD in Table 2 of the EA/FONSI. Is this request for an agricultural use or an urban use of DWB water? At 30,000 acre-feet, it represents one-sixth of SLDMWA's 180,000 acre-feet request. If it is entirely for agricultural uses, how likely is it to be fulfilled under DWB priorities for water sales?
- What are the specific urban requests for water made by Avenal State Prison, and the cities of Avenal, Huron, and Coalinga, nested within the SLDMWA request?
- Sale criteria should be premised on full compliance with all applicable environmental and water rights laws.

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Application of DWB priority criteria will depend on intervening economic factors beyond the control of the DWB. Given this uncertainty, an EIS should be prepared to provide the agencies with advance information and insight into what the sensitivity of the program's sellers and buyers are to the influences of prices—prices for water as well as crops such as rice, orchard and vineyard commodities, and other field crops. It is plausible that crop idling will occur more in field crops, while groundwater substitution would be more likely for orchard and vineyard crops. However, high prices for rice—the Sacramento Valley's largest field crop—would undermine

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[2] Neither DWR's Addendum nor the Bureau's EA specify numerical requests for the cities of Huron, Avenal, Coalinga, and the Avenal State Prison making it impossible to have a firmer number for the amount of urban request for water. Our estimate assumes SCVWD's 30,000 AF and MWD's 300,000 AF requests are for entirely urban uses of DWB-purchased water.

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this logic, and could lead to substantial groundwater substitution. We have further extensive concerns about this, described below.

On page 96, the EA finally acknowledges this reality of crop prices:

> *"Hydrologic conditions change the supply of water available for transfers, which would shift the price of water. The difference in supply of water in a wet and dry year amounts to millions of acre-feet. The regional source of the water plays a role in pricing as well. Also, agricultural prices could also affect supply of water transfers. Small changes in agricultural prices can have a large effect on water transfer supply because net returns in farming are very responsive to agricultural prices. These factors are not controlled by participants in the market."*

This statement is actually not a matter of cumulative effects, but an integral part of the chains of cause and effect that affect how the DWB would unfold in the human and natural environments. It should be recognized as part of the 2009 DWB description and should directly apply to the Agriculture and Land Use, and Socioeconomic sections of the EA, because crop prices are key factors in choices potential water sellers would weigh in deciding whether to idle crops, substitute groundwater, or decline to participate in the DWB altogether. The EA and Addendum are inadequate because they fail to identify and analyze the market context for crops as well as water that would ultimately influence the size and scope of the DWB in 2009.

Rice prices are high because of conditions for the grain in the world market. Drought elsewhere is a factor in reduced yields, but growing populations in south and east Asia demand more rice and the rice industry has struggled to meet that demand.[3]

This is very important. The Bureau tacitly admits that the Bureau—and by logical extension, DWR—has no idea how many sales of what type (public health, urban, agricultural) can be expected to occur. Put another way, there is a range of potential outcomes for the 2009 DWB, and yet the Bureau has failed utterly to use the EA to examine a reasonable and representative range of alternatives as it concerns how the priority criteria would affect DWB transfers. And DWR did not bother to conduct an appropriate level of review under the California Environmental Quality Act.

Nor does the 2009 DWB prevent rice growers (or other farmers) from "double-dipping." It appears to us they could opt to turn back their surface supplies from the CVP and the State Water Project and substitute groundwater to cultivate their rice crop—thereby receiving premiums on both their CVP contract surface water as well as their rice crop this fall when it goes to market. There appear to be no caps on water sale prices to prevent windfall profits to sellers of Sacramento Valley water in the event that groundwater is substituted in producing crops—

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[3] "Panic over rice prices hits California," *AZCentral.com*, April 24, 2008; UN News Service, "Bumper rice harvests could bring down prices but poor may not benefit, warns UN," 25 February 2009; "Era of cheap rice at an end in Taiwan: COA," *The China Post*, March 5, 2009; Jim Downing, "Sacramento Valley growers se rice prices soar," *Sacramento Bee*, 18 January 2009.

especially for crops where market prices are high, such as in rice. The DWB in the 1990s capped water prices at $125/acre-foot, much to the disappointment of some water sellers at that time. Why are the state and federal projects encouraging such potential windfall profits at a time when many others suffer through this recession?

As stated, neither the Bureau nor DWR state how much of these transfers would go to public health, urban or agricultural buyers. The EA must also (but fails to) address the ability and willingness of potential buyers to pay for DWB water given the supplies that may be available. Historically, complaints from agricultural water districts were registered in the comments on the Draft EWA EIS/R and reported in the Final EIS/R in January 2004 indicating that they could not compete on price with urban areas buying water from the EWA. Given the DWB's priority criteria, will agricultural water buyers identified in Table 2 of the EA be able to buy water when competing with the likes of the Santa Clara Valley Water District and the Metropolitan Water District, representing two of the wealthiest regions of California? As a matter of statewide water, infrastructure, and economic policy, is it wise to foment urban versus agricultural sector competition for water based solely on price? Shouldn't other factors be considered in allocating water among our state's regions? This fails dramatically to encourage regions to develop their own water supplies more efficiently and cost-effectively without damage to resources of other regions. 6-20

Full disclosure of each offer of and each request for DWB water should be provided as part of the EA. This is necessary so the public can understand and have confidence in the efficacy of the DWB, benefit from full disclosure of who requests how much DWB water and for what uses, and so that the public may easily verify chains of cause and effect. Urban application of transferred surface water is not examined in the EA/FONSI, as though how urban buyers would use their purchased water had no environmental effects. Since the dry period could last beyond 2009, how will purchased water be used and conserved? 6-21

Nor is a hierarchy of priority uses among urban users stated in the criteria for purchasing DWB water. Could purchased water be used for any kind of landscaping, rather than clearly domestic purposes or strictly for drought-tolerant landscaping? We cannot tell from the EA/FONSI narrative. How can the citizens of California be assured that water purchased through the DWB will not be used wastefully, in violation of the California Constitution, Article X, Section 2? 6-22

Will urban users need their DWB purchased water only in July through September, or is that the delivery period preferred in the DWB because of ecological and fishery impact constraints on conveyance of purchased water? 6-23

Should agricultural water users be able to buy any DWB water, how will DWR and the Bureau assure that transferred water for irrigation is used efficiently? Many questions are embedded within these concerns that DWR and the Bureau should address, especially when they approach the State Water Resources Control Board to justify consolidating their places of use in their respective water rights permits: 6-24

- How much can be expected to be purchased by agricultural water users, given the priority criteria of the 2009 Drought Water Bank? 6-25
- How much can be expected to be consumptively used by agricultural water buyers? 6-26
- How much can be expected to result in tailwater and ag drainage? 6-27
- How much can be expected to add to the already high water table in the western San Joaquin Valley? 6-28
- What selenium and boron loads in Mud Slough and other tributaries to the San Joaquin River may be expected from application of this water to WSJ lands? 6-29
- What mitigation measures are needed to limit such impacts consistent with the public trust doctrine, Article X, Section 2 of the California Constitution, the Porter-Cologne Water Quality Control Act, and California Fish and Game Code Section 5937? 6-30

In other words, the most important chains of cause and effect—extending from the potential for groundwater resource impacts in the Sacramento Valley to potential for contaminated drainage water from farm lands in the western San Joaquin Valley where much of the agricultural buyers are located—are ignored in the Bureau's EA and DWR's Notice of Exemption based upon its EWA EIS/R Addendum. 6-31

Will more of surface water transfers go to urban users than to ag users given the 2009 DWB priority criteria? The EA's silence on this is disturbing, and suggests that the DWB's priority criteria may not be that important to the actual functioning of the DWB. What assurances will the Bureau and DWR provide that these criteria will be closely followed? 6-32

- The more that goes to urban water agencies the less environmental impacts there would be on drainage impaired lands of the San Joaquin Valley, a neutral to beneficial impact of the DWB's operation on high groundwater and drainage to the SJR. 6-33
- However, the more DWB water goes to agricultural users than to urban users, the higher would be groundwater levels, and more contaminated the groundwater would be in the western San Joaquin Valley and the more the San Joaquin River would be negatively affected from contaminated seepage and tailwater by operation of the DWB. 6-34

The EA fails to provide a map indicating where the sources of the DWB are located, and where the service areas are to which water would be transferred under the DWB. 6-35

Two issues concerning water rights are raised by this EA/FONSI: 6-36

- **Consolidated Place of Use.** Full disclosure of what the consolidated places of use for DWR and USBR would be, since the permit request to SWRCB will need NEPA coverage. Why is this consolidated place of use sought by the project agencies? Does consolidation mean that each project agency has the other's place of use, effectively a merger of the permits for DWB purposes? If so, the EA should state so. Will the consolidation be a permanent or temporary request be limited to the duration of the governor's emergency declaration or of just the 2009 DWB? When is the 2009 DWB scheduled to sunset? How do the consolidated place of use permit amendments to the

SWP and CVP permits relate to their joint point of diversion? Why doesn't simply having the joint point of diversion in place under D-1641 suffice for the purpose of the DWB?

- **Description of the water rights of both sellers and buyers.** This would necessarily show that buyers clearly possess junior water rights as compared with those of willing sellers. Lack of full disclosure of these disparate rights is needed to help explain the actions and motivations of buyers and sellers in the DWB, otherwise the public and decision makers have insufficient information on which to support and make informed choices.
    - **Sacramento Valley water rights** – correlative groundwater rights, riparian rights and CVP settlement contract rights
    - **San Joaquin Valley water rights** – CVP contract rights only, junior-most contractors within the CVP priority system (especially Westlands Water District).
    - **Priority of allocations among water contractors within the CVP and SWP.**

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To establish a proper legal context for these water rights, the Project Action Alternative section of the EA/FONSI should also describe the applicable California Water Code sections about the treatment of water rights involved in water transfers.

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Thus, there are many avenues by which the 2009 DWB is a poorly specified program for NEPA and CEQA purposes, leaving assessment of its environmental effects at best murky, and at worst, risky to all involved, especially users of Sacramento Valley groundwater resources.

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B. Correcting the EA's poorly specified chains of cause and effect forces consideration of an expanded range of alternatives.

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The Proposed Action Alternative need not have sophisticated forecasts of prices for rice and other commodities. Instead, for an adequate treatment of alternatives, the EA should have examined several reasonable scenarios beyond simply the 2009 DWB and a "no action" alternative. Three reasonable permutations would have considered relative proportions of crop idling versus groundwater substitution (e.g., high/low, low/high, and equal proportions of crop idled water and groundwater substitution). Other reasonable drought response alternatives that can meet operational and physical concerns merit consideration and analysis by the Bureau include:

- Planned permanent retirement of upslope lands in the western San Joaquin Valley where CVP-delivered irrigation water is applied to lands contaminated with high concentrations of selenium, boron and mercury, and which contribute to high water table and drainage problems for lowland farmers, wetlands and tributaries of the San Joaquin River. Retirement of these lands would permanently free up an estimated 3 million acre-feet of state and federal water during non-critical water years. Ending irrigation of these lands would also result in substantial human environmental benefits for the San Joaquin River, the Bay-Delta Estuary, and the Suisun Marsh from removal of selenium, boron, and salt contamination. Having such reasonable and pragmatic practices in place would go a long way to eliminate the need for drought water banks in the foreseeable future.

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- More aggressive investment in agricultural and urban water conservation and demand management among CVP and SWP contractors even on good agricultural lands, including metering of all water supply hook-ups by all municipal contractors, statewide investment in low-flush toilets and other household and other buildings' plumbing fixtures, and increased capture and reuse of recycled water. Jobs created from such savings and investments would represent an economic stimulus that would have lasting job and community stability benefits as well as lasting benefits for water supply reliability and environmental stabilization.

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C. The 2009 DWB EA fails to specify adequate environmental baselines, or existing conditions, against which impacts would be assessed and mitigation measures designed to reduce or avoid impacts.

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The 2009 DWB environmental reviews by DWR and the Bureau incorporate by reference for specific facets of their review the 2003 and 2007 Environmental Water Account EIS/R documents. In both cases, these environmental reviews were conducted on a program whose essential purpose is to "provide protection to at-risk native fish species of the Bay-Delta estuary through environmental beneficial changes in State Water Project/Central Valley Project operations at no uncompensated water cost to the Projects' water users. This approach to fish protection involves changing Project operations to benefit fish and the acquisition of alternative sources of project water supply, called the 'EWA assets,' which the EWA agencies use to replace the regular Project water supply lost by pumping reductions."

The two basic sets of actions of the EWA were to:

- Implement fish actions that protect species of concern (e.g., reduction of export pumping at the CVP and SWP pumps in the Delta); and
- Increase water supply reliability by acquiring and managing assets to compensate for the effects of the fish actions (such as by purchasing water from willing sellers for instream flows that compensates the sellers for foregone consumptive use of water).

Without going into further detail on the EWA program, there is no attempt by the EWA agencies to characterize its environmental review as reflective of water transfer programs generally; the EWA was a specific set of strategies whose purpose was protection of fish species of concern in the Delta, not drought aid for junior water right-holding areas of California. One consequence of this attempt to rely on the EWA EIS/R is that it makes the public's ability to understand the environmental baseline of the 2009 Drought Water Bank impossible, because environmental baselines, differing purpose and need for the project, and many relevant mitigation measures are not readily available to the public. This mocks NEPA and CEQA missions to inform the public adequately about the environmental setting and potential impacts of the proposed project's actions. Moreover, a Drought Water Bank is plainly not the same thing as an Environmental Water Account.

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Another consequence is that the chains of cause and effect of an EWA versus a DWB are entirely different because of their different purposes. While the presence of water purchases, willing sellers, and requesting buyers is similar, the timing of EWA water flows are geared to enhancing and protecting fish populations; the water was to flow in Delta channels to San Francisco Bay and the Pacific Ocean. In stark contrast, the DWB's water flows focus water releases from the SWP and CVP reservoirs to be exported for deliveries in the July through September period, whereas EWA assets would be "spent" year-round depending on the specific need to protect fish. EWA was about purchasing water to provide instream flows in the Delta, while the DWB is to acquire water to serve consumptive uses outside of the Delta. 6-45

Furthermore, to tease out the various ways in which the EWA review—itself a two-binder document consisting of well over 1,000 pages—could be used to provide appropriate environmental compliance for the DWB is not even attempted by DWR and the Bureau which at least has staff that could have been assigned to undertake it; yet they do not. It is therefore well beyond the reach of non-expert decision-makers and the public, and the use of the EWA EIS/R as the basic environmental review for the DWB therefore violates both NEPA and CEQA. 6-46

Nor is any attempt made in the EWA EIS/R to characterize the EWA as a "program level" environmental review off of which a DWB-like project could perhaps legitimately tier. In our view, this reliance on the EWA EIS/R obscures the environmental baselines of the DWB from public view, inappropriately conflates the purposes of two distinct environmental reviews, and flagrantly violates of NEPA and CEQA. This could only be redressed by preparation of an EIS/R on the 2009 DWB. 6-47

Finally, the most significant baseline condition omitted in the Bureau and DWR's inadequate reporting relates to Sacramento Valley groundwater resources, discussed in the next section. 6-48

D. Scientific uncertainties and controversy about Sacramento Valley groundwater resources merit consideration that only an EIS can provide.

There is substantial evidence that the 2009 DWB may have significant impacts on the aquifer system underlying the project and the adjacent region that overlies the Tuscan Formation. This alone warrants the preparation of an EIS.

Additionally, an EIS is necessary where "[a] project['s] … effects are 'highly uncertain or involve unique or unknown risks.'" *Blue Mountains Biodiversity Project*, 161 F.3d at 1213 (quoting 40 C.F.R. §1508.27(b)(5)). Here, the draft EA/FONSI fails to adequately address gaps in existing scientific research on the hydrology of the aquifer system and the extent to which these gaps affect the Bureau's ability—and by logical extension, DWR's ability—to assess accurately the Project's environmental impacts.

1. Existing research on groundwater conditions indicates that the 2009 DWB may have significant impacts on the aquifer system.

The EA fails to describe significant characteristics of the aquifers that the 2009 DWB proposes to exploit. These characteristics are relevant to an understanding of the potential environmental effects associated with the 2009 DWB's potential extraction of up to 340,000 acre feet ("af") of groundwater. Environmental Water Account 2003 EIS/EIR Record of Decision at p. 11; Draft Supplemental Environmental Water Account 2007 EIS/EIR at p. ES-6; 2009 Drought Water Bank addendum 12/17/08 at p. 2, 3, 9; 2009 Drought Water Bank addendum 3/4/09 at p. 2, 3, 9. First, the draft EA/FONSI fails to describe a significant saline portion of the aquifer stratigraphy of the 2009 DWB area. According to Toccoy Dudley, former Groundwater Geologist with the Department of Water Resources and former director of the Butte County Water and Resources Department, saline groundwater aquifer systems of marine origin underlie the various freshwater strata in the northern counties of Butte, Colusa, Glenn, and Tehama ("northern counties"). The approximate contact between fresh and saline groundwater occurs at a depth ranging from 1500 to 3000 feet. (Dudley 2005) (A list of all references cited in these comments can be found at the end of this letter.) 6-49

Second, the EA fails to discuss the pressurized condition of the down-gradient portion of the Tuscan formation, which underlies the northern counties Project area. Dudley finds that the lower Tuscan aquifer located in the Butte Basin is under pressure. "It is interesting to note that groundwater elevations up gradient of the Butte Basin, in the lower Tuscan aquifer system, are higher than the ground surface elevations in the south-central portion of Butte Basin. This creates an artesian flow condition when wells in the central Butte Basin are drilled into the lower Tuscan aquifer." (Dudley 2005). The artesian pressure indicates recharge is occurring in the up-gradient portions of the aquifer located along the eastern margin of the Sacramento Valley. 6-50

Third, the EA fails to describe the direction of movement of water through the Lower Tuscan Formation that underlies the northern counties. According to Dudley: "From Tehama County south to the city of Chico, the groundwater flow direction in the lower Tuscan is westerly toward the Sacramento River. South of Chico, the groundwater flow changes to a southwesterly direction along the eastern margin of the valley and to a southerly direction in the central portion of the Butte Basin." (Dudley 2005). 6-51

Fourth, the draft EA fails disclose that the majority of wells used in the Sacramento Valley are individual wells that pump from varying strata in the aquifers. The draft EA incorrectly asserts that, "Groundwater users in the basin pump primarily from deeper continental deposits." EA at p. 24. Contradicting this assertion, the EA later states that, "Fifty percent of the domestic wells are 150 feet deep or less," for the Natomas Central Mutual Water Company. (EA at p. 30) Why is the information not provided for other areas of the Sacramento Valley? The thousands of domestic wells in the northern counties are as susceptible as the wells in the Natomas Central MWC. The EA expands the discussion regarding Natomas Central MWC on page 39 stating that, "Shallow domestic wells would be most susceptible to adverse effects. Fifty percent of the domestic wells are 150 feet deep or less. Increased groundwater pumping could cause localized declines of groundwater levels, or cones of depression, near pumping wells, possibly causing 6-52

effects to wells within the cone of depression. As previously described, the well review data, mitigation and monitoring plans that will be required from sellers during the transfer approval process will reduce the potential for this effect." As the latter statement makes clear, the Bureau hopes that the individual mitigation and monitoring plans will reduce the potential for impact, but there is no assurance in the EA to the thousands of well owners in the Sacramento Valley that it will reduce it to a level of insignificance. The Coalition questions the adequacy of individual mitigation and monitoring plans and suggests that an independent third party, such as USGS, oversee the mitigation and monitoring program. After the fiasco in Butte County during the 1994 Drought Water Bank and with the flimsy, imprecise proposal for mitigation and monitoring in the 2009 DWB, the agencies lack credibility as oversight agencies.

Fifth, the draft EA fails to provide recharge data for the aquifers. Professor Karin Hoover, Assistant Professor of hydrology, hydrogeology, and surficial processes from CSU Chico, finds that, "Although regional measured groundwater levels are purported to 'recover' during the winter months (Technical Memorandum 3), data from Spangler (2002) indicate that recovery levels are somewhat less than levels of drawdown, suggesting that, in general, water levels are declining." According to Dudley, "Test results indicate that the 'age' of the groundwater samples ranges from less than 100 years to tens of thousands of years. In general, the more shallow wells in the Lower Tuscan Formation along the eastern margin of the valley have the 'youngest' water and the deeper wells in the western and southern portions of the valley have the 'oldest' water," adding that "the youngest groundwater in the Lower Tuscan Formation is probably nearest to recharge areas." (Dudley 2005). "This implies that there is currently no active recharge to the Lower Tuscan aquifer system (M.D. Sullivan, personal communication, 2004)," explains Dr. Hoover. "If this is the case, then water in the Lower Tuscan system may constitute fossil water with no known modern recharge mechanism, and, once it is extracted, it is gone as a resource," (Hoover 2008). 6-53

All of these aquifer characteristics are important to a full understanding of the environmental impacts of the 2009 DWB because there are numerous indications that other aquifer strata associated with the Lower Tuscan Formation are being operated near the limit of overdraft and could be affected by the 2009 DWB. (Butte County 2007). The Bureau has not considered this important historic information in the draft EA. According to Dudley, the Chico area has a "*long term average decline in the static groundwater level of about 0.35 feet-per-year.*" (Dudley 2007) (Emphasis added.) Declining aquifer levels are not limited to the Chico Municipal area. This trend of declining aquifer levels in Chico, Durham and the Cherokee Strip is illustrated in a map submitted with this comment letter. (CH2M Hill 2006).

Declining groundwater elevations have been observed specifically in Butte County. A 2007 Butte Basin Groundwater Status Report describes the "historical trend" in the Esquon Ranch area as showing "seasonal fluctuation (spring to fall) in groundwater levels of about 10 to 15 feet during years of normal precipitation and less than 5 feet during years of drought." The report further notes: "Long-term comparison of spring-to-spring groundwater levels shows a decline of approximately 15 feet associated with the 1976-77 and 1986-94 droughts. (Butte Basin Water

Users Association, 2007.) The 2008 report indicates that, "The spring 2008 groundwater level measurement was approximately three feet higher than the 2007 measurement, however it was still four feet lower than the average of the previous ten spring measurements. Fall groundwater levels are approximately nine feet lower than the averages of those measured during either of the previous drought periods on the hydrograph. At this time it appears that there may be a downward trend in groundwater levels in this well." (Butte Basin Water Users Association, 2008.) Thus, "*it appears that there may be a downward trend in groundwater levels in this well.*" *Id.* (emphasis added).

Groundwater elevations in the Pentz sub-area in Butte County also reveal significant historical declines. The historical trend for this sub-area "…shows that the average seasonal fluctuation (spring to fall) in groundwater levels averages about 3 to 10 feet during years of normal precipitation and approximately 3 to 5 feet during years of drought. Long-term comparison of spring-to-spring groundwater levels shows a decline in groundwater levels during the period of 1971-1981, perhaps associated with the 1976-77 drought. Since a groundwater elevation high of approximately 145 feet in 1985 the measured groundwater levels in this well have continued to decline. Recent groundwater level measurements indicate that the groundwater elevation in this well is approximately 15-25 feet lower than the historical high in 1985. *Id.* Water elevations at the Pentz sub-area well have been monitored since 1967. "Since 1985 spring groundwater levels in this well have been declining, and the spring 2008 measurement remained ten feet below historical high levels and continues the downward trend on the hydrograph." *Id.* (Emphasis added.)

Both the Pentz and Esquon Ranch areas are located east of U.S. 99, in the eastern portion of the Tuscan aquifer.

In light of this downward trend in regional groundwater levels, the Bureau's EA should closely analyze replenishment of the aquifers affected by the proposed 2009 DWB. The draft EA fails to provide any in-depth assessment of these issues. For example, the EA fails to discuss the best available estimates of where groundwater replenishment occurs. Lawrence Livermore National Laboratory analyzed the age of the groundwater in the northern counties to shed light on this process: "Utilizing the Tritium (H3) Helium-3 (He3) ratio, the age of each sample was estimated. Test results indicate that the "age" of the groundwater samples ranges from less than 100 years to tens of thousands of years,: (Dudley et al. 2005). As mentioned above, Dudley opines that the youngest groundwater in the Lower Tuscan Formation is probably nearest to recharge areas. (2005).

Are isotopic groundwater data available for other regions in the Sacramento Valley? If so, they would be crucial for all concerned to understand the potential impacts from the proposed 2009 DWB. For example, the EA states, "The WFA area that could be affected by the proposed action includes only the 'North Area' bounded on the north and east by the Sacramento County line, by the Sacramento River on the west, and by the American River on the south." EA at p. 34. If this is the area in Sacramento County that is identified as most vulnerable to groundwater impacts,

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yet two major rivers surround it, shouldn't the Bureau understand the hydrologic relationship between the groundwater basin and the rivers? If that understanding exists, where is it presented in the EA? It is well known that the Sacramento River is already a losing river south of Princeton.

The Bureau should prepare an EIS that considers this and other existing research to evaluate the 2009 DWB's anticipated effect on regional hydrology.

6-55

2. The 2009 DWB proposes to rely on inadequate monitoring to avoid the acknowledged possibility of significant adverse environmental impacts.

The draft EA relies deflects responsibility of the Bureua and DWR for monitoring to individual "willing sellers." EA at p. 21. This fails to provide the most basic framework for governmental authority to enforce the state's role as trustee of the public's water in California, let alone a comprehensive and coordinated structure, for a very significant program that could transfer up to 389,328 af of water from the Sacramento Valley. (Recall that DWR suggests potential sale of water up to 533,000 AF, and believes it has environmental compliance coverage for up to 600,000 AF of water sales from the Sacramento Valley, including 340,000 AF in groundwater substitution alone.) The draft EA further defers responsibility to local groundwater management plans and ordinances to determine when the effects of the proposed extraction become "adverse." EA at p. 22. "As described in Section 3.2, well reviews and monitoring and mitigation plans will be implemented under the proposed action to minimize potential effects of groundwater substitution. Well reviews, monitoring and mitigation plans will be coordinated and implemented in conjunction with local ordinances, basin management objectives, and all other applicable regulations." EA at p. 10. The draft EA merely provides monitoring direction to "willing sellers" without identifying specific actions, responsible agencies, or funding that will be necessary for this oversight. This is unacceptable.

We propose instead that the Bureau and DWR require at a minimum that local governments select independent third-party monitors, who are funded by surcharges on DWB transfers paid by the buyers, to oversee the monitoring that is proposed in lieu of Bureaus and DWR staff. EA at p. 41-45.

Otherwise, the DWB's proposed monitoring is insufficient and cannot justify the significant risk of adverse environmental impacts. For example, the EA fails to identify standards that would be used to monitor the 2009 DWB's impacts. It fails to identify any specific monitoring protocols, locations (particularly in up-gradient recharge portions of the groundwater basins), and why chosen locations should be deemed effective for monitoring the effects of the proposed groundwater extraction. It also fails to describe how the objectives in the Drought Water Transfer White Paper will be met and by whom. EA at p.43. Moreover, it fails to provide a mitigation strategy for review and comment by the public, but defers this vital mitigation planning effort. EA at p.43. Another example of the inadequacy of the proposed monitoring is

that the draft EA fails to include any plan to monitor stream flow of creeks located in the presumed recharge area for the Lower Tuscan Formation located on the eastern edge of the Sacramento Valley.

Adequate monitoring is vital to limit the significant risks posed by the DWB to the health of the region's groundwater, streams, and fisheries, as discussed below. Moreover, to the extent this Project is conceived as a one-year drought program that will provide knowledge for future groundwater extraction, its failure to include adequate monitoring protocols is even more disturbing and creates the risk of significant long-term and even irreversible impacts from the DWB.

a. The Bureau's assertion that the DWB will be modified or halted in the event of significant adverse impacts to hydrologic resources is an empty promise in light of the wholly inadequate monitoring provided for in the DWB. Knowing that the Bureau and DWR knowingly violated the X2 standard in the Delta in February 2009 does little to instill confidence from the Coalition in non-specific program and mitigation criteria.

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The EA repeatedly illustrates that there is potential for significant injury to other groundwater users, water quality, streams, flora and fauna, and the soil profile, EA at p. 36-41. Page 36 alone has numerous examples that illustrate the need for an EIS since there is insufficient, comprehensive planning for, let alone preparation to mitigate, adverse environmental impacts:

- *Crop idling and groundwater substitution transfers under the proposed action could affect groundwater resources. Changes in groundwater levels could cause secondary effects. Declining groundwater levels could result in: 1) increased groundwater pumping cost due to increased pumping depth, 2) decreased yield from groundwater wells due to reduction in the saturated thickness of the aquifer, 3) reduced groundwater in storage, and 4) decrease of the groundwater table to a level below the vegetative root zone, which could result in environmental effects.*
- *Groundwater pumping within the vicinity of a surface water body could change the existing interactions between surface and groundwater, potentially resulting in decreased stream flows and levels, with potential adverse effects to the riparian habitat and downstream users. The pumping of groundwater near wetland habitats could also result in adverse environmental effects.*
- *Excessive groundwater extraction from confined and unconfined aquifers could result in a lowering of groundwater levels and, in confined aquifers, a decline in water pressure. The reduction in water pressure results in a loss of support for clay and silt beds, which subsequently compress, causing a lowering of the ground surface (land subsidence). The compaction of fine-grained deposits, such as clay and silt, is permanent. The possible consequences of land subsidence are 1) infrastructure damage and 2) alteration of drainage pattern.*
- *Changes in groundwater levels or in the prevailing groundwater flow regime could cause a change in groundwater quality through a number of mechanisms. One mechanism is the potential mobilization of areas of poorer quality water, drawn down from shallow*

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> *zones, or drawn up into previously unaffected areas. Changes in groundwater gradients and flow directions could also cause (or speed) the lateral migration of poorer quality water. Artificial or enhanced recharge of the aquifer with water of poorer quality, or even different geochemical constituents, could also have an adverse effect on existing conditions. Geochemical differences between the recharged water and groundwater could affect resultant groundwater quality through geochemical processes such as precipitation, bacterial activity, ion exchange, and adsorption.*

The Bureau thus recognizes the potential for significant decline in groundwater levels as a result of the proposed activity. EA at p. 36, 37. This acknowledgement alone is sufficient to require a full EIS. Moreover, as detailed below, the monitoring proposed by the 2009 DWB is so inadequate that there can be no guarantee that adverse impacts will be discovered, or that they will be discovered in time to avoid significant environmental impacts.

Glenn County is noticeably omitted from the list of counties with some local regulatory authority. EA at p. 28-29. Glenn County does have a Groundwater Management Plan (adopted in August 2001), albeit inadequate. The Bureau's own 2008 EA for the GCID Seven Wells Project cautioned that "[s]ince the groundwater management plan is relatively new and not fully implemented, the enforcement and conflict resolution process has not been vigorously tested." Moreover, the Glenn County Groundwater Management Plan does not have any provisions to monitor or protect the environment. The 2009 DWB EA fails to explain why this management plan, as inadequate as it is, is not discussed nor is the absence of local protection mentioned.

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b. Monitoring based on the Glenn County Groundwater Management Plan is inadequate. Since the Bureau omitted discussion of the Glenn County Groundwater Management Plan in the 2009 DWB, we refer to the language used in the 2008 Stony Creek Fan EA/FONSI that explained that the existing Glenn County groundwater management plan will ensure the testing project will have no significant adverse effects on groundwater levels: "This Finding of No Significant Impact (FONSI) is based upon the following: … Implementation of the Glenn County Groundwater Management Plan during the aquifer performance testing plan will ensure that the proposed action will not result in any significant adverse effect to existing groundwater levels." Stony Creek Fan EA/FONSI at p. 2.

But the Butte County Department of Water and Resource Conservation explains that local plans are simply not up to the task of managing a regional resource:

> *Glenn County does not have an export ordinance because it relies on Basin Management Objectives (BMO) to manage the groundwater resource, and subsequently to protect third parties from transfer related impacts. Recently, Butte County also adopted a BMO type of groundwater management ordinance. Butte County, Tehama County and several irrigation districts in each of the four counties have adopted AB3030 groundwater management plans. All of these groundwater management activities were initiated prior to recognizing that a regional aquifer system exists that extends over more than one*

> *county and that certain activities in one county could adversely impact another. Clearly the current ordinances, AB3030 plans, and local BMO activities, which were intended for localized groundwater management, are not well suited for management of a regional groundwater resource like that theorized of the Lower Tuscan aquifer system.*

(Butte County DWRC 2007).[4]

c. The EA fails to propose real time monitoring for land subsidence. Third-party independent verification, perhaps by scientists from the U.S. Geological Survey, should be incorporated by DWR and the Bureau into the project description of the 2009 DWB. The draft EA/FONSI relies on very few existing extensometers in the Sacramento Valley that measure land subsidence, and a Global Positioning System land subsidence network established by one county. EA/FONSI at p. 26 and 32. The remaining responsibility is again deferred to the "willing sellers." Unfortunately, voluntary monitoring by pumpers does not strike us as a responsible assurance given the substantial uncertainties involved in regional aquifer responses to extensive groundwater pumping in the Sacramento Valley. 6-59

Not only is there a failure to discuss real time monitoring for subsidence, there also is no discussion regarding delayed subsidence that should also be monitored according to the findings of Dr. Kyran Mish, Presidential Professor, School of Civil Engineering and Environmental Science at the University of Oklahoma. Dr. Mish notes: "It is important to understand that *all* pumping operations have the potential to produce such settlement, and when it occurs with a settlement magnitude sufficient enough for us to notice at the surface, we call it *subsidence*, and we recognize that it is a serious problem (since such settlements can wreak havoc on roads, rivers, canals, pipelines, and other critical infrastructure)." (Mish 2008). Dr. Mish further explains that "[b]ecause the clay soils that tend to contribute the most to ground settlement are highly impermeable, their subsidence behavior can continue well into the future, as the rate at which they settle is governed by their low permeability." *Id.* "Thus simple real-time monitoring of ground settlement can be viewed as an *unconservative* measure of the potential for subsidence, as it will generally tend to underestimate the long-term settlement of the ground surface." *Id.* (emphasis added).

d. The 2009 DWB EA fails to require stream flow monitoring, choosing to defer the monitoring and mitigation planning to "willing sellers." We also urge incorporation of frequent and regular streamflow monitoring by either staff of the project agencies or a third, independent party such as the USGS, paid for by DWB transfer surcharges mentioned above. It is clear from existing scientific studies and the EA that the DWB may have significant impacts on the aquifers replenishment and recharging of the aquifers, and the 2009 DWB should therefore require extensive monitoring of regional streams. The radius for monitoring should be large, not the typical two to three miles as usually used by DWR and the Bureau. Though not presented for the 6-60

DWB, the *Stony Creek Fan Aquifer Performance Testing Plan, which is a much smaller project,* recognized that there may be a drawdown effect on the aquifer by considering results from a DWR Northern District spring 2007 production well test (EA/FONSI p. 28). However, it did not assess the anticipated scope of that effect—or even what level of effect would be considered acceptable. Moreover, the results from that test well indicate that the recharge source for the solitary production well "is most likely from the foothills and mountains, to the east and north"—which at a minimum is more than fifteen miles away. (DWR, Glenn-Colusa Irrigation District Aquifer Performance Testing Glenn County, California).

The Butte County Department of Water and Resource Conservation has identified streams that must be monitored to determine impacts to stream flows that would be associated with pumping the Lower Tuscan Aquifer. These "[s]treams of interest" are located on the eastern edge of the Sacramento Valley and include: Mill Creek, Deer Creek, Big Chico Creek, Butte Creek, and Little Dry Creek. (The Butte County DWRC 2007). The department described the need and methodology for stream flow gaging:

> *The objective of the stream flow gaging is to determine the volume of surface water entering into or exiting the Lower Tuscan Aquifer along perennial streams that transect the aquifer formation outcropping for characterization of stream-aquifer interactions and monitoring of riparian habitat. Measurement of water movement into or out of the aquifer will allow for testing of the accuracy of the Integrated Water Flow Model, an integrated surface water-groundwater finite differential model developed for the eastern extent of the Lower Tuscan aquifer.*
>
> *Two stream gages will be installed on each of five perennial streams crossing the Lower Tuscan Formation to establish baseline stream flow and infiltration information. The differences between stream flow measurements taking upstream and downstream of the Lower Tuscan Formation are indications of the stream-aquifer behavior. Losses or gains in stream volume can indicate aquifer recharge or discharge to or from the surface waters.*

Id.

As evident in the following conclusory assertions, the draft EA/FONSI narrowly defines the radius of influence associated with the aquifer testing and thus entirely fails to identify potential significant impacts to salmon:

> "Interaction with Surface Water - Pumping close to the Sacramento River, and close to tributaries could reduce channel flows. This reduction in channel flows could adversely affect riparian and aquatic habitats, including wildlife refuge habitat, as well as downstream water users… Groundwater pumping for groundwater substitution transfers could reduce flows in nearby surface water bodies. (EA at p. 38)